Watkins (T. J.) et al.

GONORRHEA IN WOMEN.

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The number and character of the other papers in this symposium make it necessary for me to consider gonorrhea only as it is peculiar to women. I will simply review the more important points in the subject in order to make the paper brief and in order to open up the entire subject for discussion. Great credit is due Noeggerath for demonstrating the importance of this subject, which he did years before the medical profession were able to realize its significance. Fordyce Barker, in opening the discussion on his paper before the American Gynecological Society in 1876, said: "If these views are true, a modification of this paper should be found in every Sabbath-school library throughout the land." In the discussion which followed, Noeggerath's views were very severely criticised. Only until recently have his teachings been fully appreciated.

FREQUENCY.

The frequency of gonorrhea in women varies as regards location and social position. The frequency varies in these respects as it does in the male, but is not so common in women as in men. Sänger states that 25 per cent of his hospital and private patients have gonorrhea. Lomen found the diplococcus in fully 60 per cent of the cases in Schroeder's clinic. In A. Martin's clinic, in 2,078 cases, 279 were due to gonorrhea. According to E. Werthim, gonorrhea is the most frequent cause of suppuration met with in gynecological practice. Kopytowsky finds that 10 per cent of the prostitutes whom he has examined still have gonorrhea in the vaginal secretions, after they have been discharged from the hospital as cured of gonorrhea; that 7 per cent of prostitutes admitted to the hospital for other diseases have gonorrhea in the vaginal secretions; and concludes that 8 per cent of all healthy prostitutes have gonorrhea. From my observations I would conclude that the percentage must be larger than this in this class of people, as in the large majority of them, careful investigation shows redness and discharge about the urethral glands, the glands of Bartholin and the other glands at the vaginal orifice. Dudley says: "The pavement

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epithelium of the vagina and the presence of the lactic acid bacteria normally found there by Döderlein, make the vagina relatively immune." There can probably be no doubt that immunity to infection exists, as in all probability all prostitutes are subjected to gonorrheal infection.

LOCATION.

The gonococcus has been found in all the mucosa of the entire female generative organs; and has been found in the musculature of the uterus and in ovarian abscesses. In one case of double ovarian abscess which I operated, the gonococci were the only microorganisms present. The Fallopian tubes were not diseased. In this case the gonococci probably passed from the uterine mucosa through the uterine wall into the ovary. Bacteriological examinations made in Howard Kelly's clinic at Johns Hopkins Hospital, of pus from ovaries and tubes in 49 cases, showed the presence of gonococci in 7 of them. This, however, does not indicate that only seven of them were due to gonorrhea. Sänger and A. von Rosthorn found tubal disease in 33 per cent of women affected with gonorrhea. The statistics of Bumm show that gonorrhea extends into the Fallopian tubes in about 10 per cent of cases affected with the disease. Gonorrhea is found less frequently in the urethra than about the vaginal orifice. A. Martin considers this due to the infrequency of glands about the urethra. Penrose thinks that gonorrhea attacks the different parts in the following order of frequency: The urethra, the cervix uteri, the vulva and the vagina. Pryor says that gonorrheal endocervicitis occurs five times as often as gonorrheal vaginitis. Gonorrhea seldom extends to the bladder, although it may do so and may even extend into the ureters and to the kidneys. It is not uncommon for gonorrhea to extend into the rectum. Baer, in the examination of 191 cases of discharge from the bowel in women, found gonococci in 76 cases. Sänger thinks the greater number of rectal strictures are gonorrheal in origin. I have observed gonorrheal proctitis in five or six cases. The disease probably extends to the rectum from the vaginal secretions, from rectal examinations and from use of infected rectal syringe points. Dr. A. H. Burr gave the results of an exhaustive study of this subject in a paper which he read before this society in November, 1896.

ETIOLOGY.

Bumm states that the development of gonorrhea is never primary in the vagina, but that invasion is by way of the cervix, or, more rarely, the urethra, where the epithelium is less resistant. This is

especially true of the cervix where the epithelium is cylindrical. According to Steinschneider and Fabay, however, the urethra is the more frequently attacked. Schultz's recent investigations show that the urethra and cervix are primarily involved in about the same proportion of cases. Bumm has stated that pregnancy will provoke an excessive development of gonorrhea even in cases in which the date of infection has been very remote. J. Veit believes that the first attack of gonorrhea usually disappears spontaneously and that the Fallopian tubes become involved in the first attack only in rare cases of infection, shortly before or after labor. Bumm has kept gonorrheal pus in contact with the vaginal wall for twelve hours without producing any inflammatory reaction. Menstruation favors but does not insure the revival of gonorrhea in latent cases. This is due to discharge from the glands and also because blood serum is an excellent culture medium for the growth of the gonococcus. This is the reason why gonorrhea is frequently contracted during or near the menstrual period. This indicates the advisability of the frequent use of antiseptic douches during menstruation. One patient under my care had repeated attacks of vulvovaginal gonorrhea following menstruation, as the result of infection from the endometrium. By the use of douches during menstruation these attacks were prevented. The tendency for gonorrhea to extend during menstruation accounts for the fact that attacks of metritis, salpingitis and peritonitis so frequently date from a menstrual period, or from an interrupted menstruation. Bumm denies that gonococci lose their virulence and holds that infection from an old case, if planted on healthy mucosa, produces an acute attack. Bumm believes that gonorrhea is a pure mucous membrane parasite. Schultz, after extensive microscopical investigation, concludes that gonococci are much more numerous in the urethra than in the cervix, and consequently that infection most frequently takes place from the urethra.

PATHOLOGY.

It was formerly believed that gonorrhea was not a pus producing microorganism; that when suppuration occurred the infection was a mixed one. This has been disproven by finding in large collections of pus, gonococci as the only microorganism present. In gonorrheal inflammation, however, the amount of exudate is greater than in most of the other inflammations. Gonorrheal inflammation usually extends by continuity of tissue. It may, however, extend through the lymphatics and the blood vessels. An illustration of extension through the lymphatics is seen in inflammation of the

inguinal glands and in the broad ligaments, during the acute stage of the disease. That it may extend through the blood vessels is proven by the gonococcus having been found in the blood and in the tissues far distant from the primary seat of the disease.

SYMPTOMATOLOGY.

The disease may be acute or subacute from the first. In the acute cases the symptoms may be similar to any acute vulvovaginitis and urethritis. The uterus and adnexa are seldom primarily involved, although in rare cases there may be present symptoms of acute metritis and pelvic peritonitis, probably never general peritonitis. The fact that the gynecologist is called upon relatively seldom to treat the disease in the acute form causes me to believe that the subacute is the more common mode of invasion of the disease. In the latter variety a leucorrheal discharge is primarily the principal, and may be the only symptom. If the disease extends to the Fallopian tubes, the symptoms will then be those of salpingitis, with probable suppuration. In some cases the disease is excessively acute, as the result of either diminished resistance to, or great virulency of, the infection.

DIAGNOSIS.

The only positive diagnosis is made by detecting the presence of the gonococcus. This can usually, if not always, be accomplished during the acute stage of the disease. In the acute variety, however, there is usually no difficulty in making a relatively certain diagnosis, without the use of the microscope. In the subacute and chronic stages of the disease, the gonococcus is detected with much more difficulty. When it is not found, the technique may be faulty or the investigation not sufficiently thorough. Absence of the gonococcus, however, does not prove that the disease is not primarily due to gonorrhea. Redness about the openings into the Bartholinian glands and into the urethral glands, usually, if not always, means that the patient has had gonorrhea. How long the gonococcus can be found in the tissues after the date of infection cannot be stated. Bumm states that the gonococci may persist and remain virulent in the genital tract for five or ten years. Sänger, in discussing residual gonorrhea in women, states that after the disappearance of gonococci in the secretions, certain manifestations of the disease may remain, such as redness about, and discharge from, the glands at the vaginal orifice, the urethra and the cervix.

PROGNOSIS.

The statement frequently made that gonorrhea may remain in

a latent form an indefinite time is probably true. A number of cases are on record where gonorrhea has been contracted a number of years after the disease was acquired. It is not improbable, however, that the subjects may not have subsequently been exposed to subacute infections. Spontaneous cures probably result in the male and female. The claim made that spontaneous cures are more frequent in men than in women, if true, may be due to the increased number of glands and cylindrical epithelium in the female generative organs. From investigations of Döderlein, Krönig and others, relative to the destructive nature of the bacteria of the normal vaginal secretions to pathogenic microorganisms, would indicate that the contrary would be true. Steinschneider has demonstrated that gonococci are often present in the cervix and body of the uterus long after they have disappeared from the urethra and vagina. Immunity after recovery from the disease does not seem to take place, as Klein has found that in chronic gonorrhea the individual may become accustomed to the presence of the gonococcus and that the microorganism from such a case may cause the virulent disease in another person, and then cause reinfection in the original person. Gonorrheal inflammation of the Fallopian tubes, probably nearly always results in thickening of the tubal walls, in occlusion of the abdominal ostium, in adhesions, or in suppuration. Complete spontaneous cures, however, of the tubes probably do occur. I recently saw in consultation a patient with acute gonorrhea, involving the pelvic peritoneum; the uterus was large, excessively sensitive, and there was swelling in the region of both broad ligaments, more marked on the left side. The husband had had gonorrhea, and gonococci were found in the discharge from the patient. About six months after recovery from the acute attack, I made a vaginal fixation of the uterus for retroposition. The Fallopian tubes were perfectly normal and the only adhesions found were slight ones about the left ovary. It can not be said, however, that the tubal mucosa was involved at all. The patient now seems to be perfectly well. The literature is meager relative to spontaneous recovery of gonorrheal salpingitis.

The prognosis as regards sterility has received a great deal of attention since Noeggerath demonstrated the importance of the subject. Graefe and Kleinwachter have investigated the causes of sterility and conclude that gonorrhea is not as prominent an etiological factor as generally supposed. In 648 cases of sterility, Kleinwachter found but 80 in which the sterility could be ascribed with certainty to gonorrhea; in 12 of these the husband was known to have had the disease.

TREATMENT.

In the acute stage I believe in the free local use of nitrate of silver, 10 to 30 grains to the ounce of water, to be followed by antiseptic gauze tampons, or the frequent use of antiseptic douches. Vaginal douches should be given frequently during menstruation when gonorrheal vulvovaginitis exists, to diminish the tendency of the disease to extend into the uterus. The disease is most liable to extend to the uterus at this time, for the reasons already given. The douche should be at the body temperature, and only sufficient in quantity for cleanliness, so as not to interfere with menstruation. Acute inflammation of the uterus and adnexa should be treated entirely by palliative measures, unless large pelvic abscesses result, which would require vaginal incision and drainage.

In chronic inflammation about the glands at the vaginal orifice and urethra, the treatment is limited to palliative measures, unless they cause sufficient trouble to indicate excision. Suppurative disease in the Bartholinian glands and Skene's tubules demand excision. Skene's glands are excised by removing the portion of the urethrovaginal septum which includes them and in suturing the mucous membrane of the urethra to the vaginal mucous membrane.

Chronic endometritis is treated by curettage, mild caustic applications and by establishing drainage, if necessary. It may be necessary to repeat the curettage and to continue the treatment for a long space of time in order to effect a cure.

The treatment of chronic gonorrheal salpingitis will vary largely with the symptoms which result and with the amount of disease present. The adhesions which result from inflammation may, in selected cases, be relieved by massage, topical applications, etc. The presence of an enlargement in the region of the tubes or ovaries does not necessarily require any treatment. To illustrate, I will briefly relate two cases that came under my observation seven years ago. They both had had gonorrhea and had had slight attacks of pelvic peritonitis. When I saw them they had slight backward displacements of the uterus with enlargement of both uterine appendages. I observed these cases for four years and during this time they experienced comparatively very good health, much better physically and mentally, I am certain, than if they had been subjected to operative treatment. Such cases should not be operated, unless symptoms develop which indicate interference, as the pus in these cases frequently becomes sterile. When suppuration occurs, indicating operative interference, it is nearly always necessary to excise the affected tube or tubes, as the abscesses are usually

multiple, not sufficiently circumscribed, and as the exudate is too abundant to make an attempt at incision and drainage justifiable.

Some conservative surgery has been done upon the tubes affected with gonorrhea with good success in a limited number of cases. The results, however, are not sufficiently numerous as yet to enable one to form any conclusions. It may probably be said, without exciting contradiction, that tubes affected with gonorrhea calling for operation, should be excised, as the danger of recurrence of the disease is marked and as sterility, in all events, is almost certain.

In nearly all cases of gonorrheal inflammation, the ovaries, or some ovarian tissue, remains healthy. When operating these cases, especially if the subject be young, an effort should always be made to preserve menstruation, by leaving the ovaries, an ovary, or some ovarian tissue. It is my opinion that this can be accomplished in from ninety to ninety-five per cent of all cases of gonorrheal inflammation of the uterine adnexa, where the disease is such as to indicate operative treatment. When the endometrium is affected, both ovaries and tubes the seat of suppuration, and the uterus large and adherent, vaginal hysterosalpingoöpherectomy is decidedly the operation of election.

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GONORRHEA IN CHILDREN.

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Gonorrheal infection of children manifests itself primarily as a vulvovaginitis, a urethritis of the male child, a purulent ophthalmia, stomatitis or rhinitis of the new-born.

It is the purpose of this paper to discuss genito-urinary gonorrhea and complications in children. So frequently has the gonococcus been found in cases of vulvovaginitis, that no doubt can be felt that gonorrheal infection plays an important role in this disease.

Cahen-Brach (Jahrbuch fur Kinderheilkunde, 1892) examined twenty-six children suffering from vulvovaginitis, and in every case but one gonococci were found. W. Fisher (Deutsche Med. Woch., 1895) examined the secretion in fifty-four cases, in fifty of which he found gonococci. The disease occurs in children from one to twelve years, though it is most frequent in children under six years of age.

As to the constitutional condition of the little girls, it has been pretty generally observed that weakly or rachitic children are not particularly susceptible; on the contrary, the children, as a rule, are well developed and well nourished.

THE CLINICAL COURSE AND SYMPTOMATOLOGY.

On the inner surfaces of the thigh and on the perineum one usually observes an eczematous condition of the skin covered with a dried greenish-yellow pus. The labia majora adhere to one another. If they be separated, it is noticed that the mucous membrane of the vestibule is red and swollen, as is also the hymen, and a quantity of pus is to be seen. Pressure upon the perineum will frequently cause pus to exude from the vagina. In the majority of cases the urethra is involved. It is not unusual to find the ducts of the Bartholinian glands involved and a small quantity of pus can sometimes be pressed out of these ducts.

Fisher reports a Bartholinian abscess. In many cases the inguinal glands are enlarged, particularly in those cases where eczema or excoriation exists. As a rule, the temperature is normal, though slight elevations during the first few days of the illness have been recorded. As a general thing, the subjective symptoms are trifling or absent. The intertrigo may cause itching, or there may be pain upon urination or vesical tenesmus. The disease may last for weeks or months. The urethritis may persist after the vulvo-

vaginitis has terminated. Exacerbations and relapses are not uncommon. The endometrium is said never to be involved.

Aside from gonorrheal ophthalmia, the gonorrheal virus may infect the infant at birth upon other mucous membranes. Rosinski (Deut. Med. Woch., 1891) describes a stomatitis in new-born children caused by the gonococcus. The lesions develop only when the pavement epithelium has been removed. They consist of yellowish plaques on the roof of the mouth, surrounded by a border of pale reddish tissue. These plaques heal without the formation of scar tissue.

Cunier and Ziem (Allgemeine Med. Centralzeitung, 1886) report cases of gonorrhea of the nasal mucous membrane in new-born children.

PERITONEUM.

As in the adult female, the tubes or ovaries and peritoneum may be involved. Gonorrheal pus in the tubes has been found at autopsy in five cases of girls, from seven to nine years of age. It must not be forgotten therefore that the genitalia of little girls may be the point of entrance for the organisms which cause peritonitis. The bladder is seldom involved in little girls; a temporary vesical tenesmus, or, in rare cases, a temporary vesical catarrh may occur.

MANNER OF INFECTION.

Epidemics of vulvovaginitis have been frequently described; they occur particularly in hospitals and institutions and among the children of the poor, though none are exempt. Skutch (Inaug. Disr., Jena, 1891) describes what is probably the largest epidemic which has yet been reported. During the month of August, 1890, 236 cases were reported in the city of Posen, and probably many more occurred that never came to notice. These cases all developed in the course of eight to fourteen days in little girls from six to fourteen years of age, namely, school children. In a number of the children it was noticed that the disease occurred after they had visited on one or more occasions a free public bath. The common use of towels, soap, and the bath water may have carried the contagion from one child to the other. In the majority of cases gonococci were demonstrated. Purulent ophthalmia developed in a number of cases not stated.

The vulva and urethra are most often attacked primarily; the vagina, if involved, becomes so secondarily; the gonorrheal virus may be conveyed through sponges, towels, bed linen, by manipulations of the parts with unclean fingers, fever thermometers, or the contagion may in rare cases be conveyed by criminal assaults on little girls.

Jerome Walker, of Brooklyn, reports in the Archives of Pediatrics, for 1886, twenty-one cases of indecent assault and rape upon children. Seven children of this series developed a vaginal discharge, probably gonorrheal in nature.

In case VI of Walker's series a two and one-half year-old child was examined at an institution and found suffering from a vulvovaginitis. The father and mother had both been sentenced to the penitentiary for six months for vagrancy; both were found to be suffering from suspicious genital discharges. Walker, in commenting on the case, suspects the father as possibly guilty of indecent assault on this child. We know, however, from our present knowledge, that the child could have been infected in various ways other than direct infection from the father. If in this case gonococci had been actually found, the value from a medicolegal point of view would have been of little importance, because it would be necessary to exclude all the other modes of infection.

For proof that the disease may be conveyed by fever thermometers, the experience many years ago of the St. Annen Kinderspital of Vienna is of interest. It was found that nearly every little girl who came to the hospital for treatment suffered in a few days from a vulvovaginitis. The cause of the infection was eagerly sought for, though the epidemic persisted until the director of the hospital ordered that the method of taking temperatures by rectum be stopped; with this the epidemic ceased. The vulvovaginitis may occur in new-born children, though the infection of the vulva occurs rarely when compared to the infection of the conjunctiva. This is probably due to the protection which the adherent labia majora offers to the external genitals, and, moreover, the sojourn of the breech in the birth canal is much shorter in most cases than is that of the head. It is to be remembered, as has been pointed out by Epstein, that a physiological discharge may occur from the genitals of new-born children caused by an epithelial desquamation, similar to the desquamation which occurs on the surface of the body.

PROGNOSIS.

In a general way, it may be said that the prognosis in little girls is more favorable than in adults. In a majority of cases the disease terminates in about three months, though there are cases recorded where a chronic urethritis for a long time resisted all forms of treatment.

DIAGNOSIS.

Clinically, great difficulty is frequently experienced in diagnosing cases of simple vulvovaginitis from the gonorrheal variety. We must rely for an accurate differentiation upon the microscopical examination. The pus for examination should be taken from as high a point in the tract as possible, preferably from the orifice of the urethra. Examination of the pus from a case of simple catarrh shows that the discharge is made up of epithelial and pus cells with quite a variety of bacterial forms, bacilli, cocci and diplococci. These bacteria are found in the pus cells and the epithelial cells, not singly, but associated together. The diplococci are few in number. In cases of gonorrheal inflammation large masses of diplococci are found in the pus cells, usually they are the only bacteria present. By staining with Gram's method, the gonococcus is decolorized, the other form of diplococcus is not decolorized.

TREATMENT OF VULVOVAGINITIS; PROPHYLAXIS.

Owing to the fact that the gonorrheal virus is readily conveyed to little girls, children should avoid sleeping with persons suffering from gonorrhea. The child should have its exclusive bed, and have for its exclusive use towels, sponges and wash-rags. In hospitals, asylums and public bathing houses similar precautions should be taken. Children suffering from suspicious vaginal discharges should not be admitted to the general wards of children's hospitals and asylums.

TREATMENT.

The treatment consists of cleanliness, antisepsis and rest to the parts. The vulva should be kept scrupulously clean; in severe cases it should be irrigated three or four times daily with a saturated boric acid solution or a solution of 1-10,000 bichloride. Cassel advises (Berlin. Klin. Woch., 1893) that after the preliminary cleansing of the vulva the child be placed in the lithotomy position with the pelvis elevated. A soft rubber catheter, or the tubing of a soft rubber balloon syringe is introduced into the vagina, and the same irrigated. He uses 1-1000 or 1-2000 bichloride solution. Later, if the condition persists he uses one or one and a half per thousand nitrate of silver solution. The bichloride irrigation is extensively used, though not in as strong solutions as advised by Cassel; solutions of one to five or one to ten thousand answering the same purpose. Permanganate of potassium or of zinc in solutions of the strength of 1-3000 are extensively used. Many other antiseptic solutions are advised. In obstinate cases irrigation with astringent solutions, such as the sulphate of zinc or tannic acid, may be used.

A pad of sterilized cotton well dusted with boric acid and starch may be placed between the labia to prevent the irritation caused by the purulent discharge.

Experience teaches that the irrigation of the urethra with strong antiseptic solutions, or the introduction into the urethra of bacilli of iodoform or thallin, or any similar procedure does not do any permanent good. The administration of salol and boric acid in appropriate doses are recommended for the urethritis.

GONORRHEAL URETHRITIS IN MALE CHILDREN.

The symptoms present much the same picture as is seen in the adult. Koplik has seen children in arms suffering from this condition. Bokai observed 109 cases of urethritis in children, many of whom, he points out, suffered for weeks or months from a urethritis. Most of these were probably gonorrheal. Twenty-seven occurred during the first year, thirty-six from the first to the third year, thirty-two from the third to the seventh year, and fourteen from the seventh to the fourteenth year.

Holmes (Surgical Treatment of Diseases of Children) devotes a special chapter to this subject. He says he has not infrequently seen cases of gonorrhea in male children. Rona reports fifteen cases. He says the process was in every case a urethritis totalis, the disease becoming chronic, and usually lasting for months. Moncorvo has seen many cases of gonorrhea in small boys. Von Arsdale has frequently observed gonorrheal urethritis in young boys. One case was in a child ten months old; two cases were in children from one to four years. I have notes of two cases.

Case 1. P. L., a boy aged two years and three months, was seen in private practice for the first time January 7, 1898. The parents are of average intelligence and live in very comfortable quarters. The previous health of the child was good. The child was pale, had a temperature of 100.8 degrees, and was suffering from a urethral discharge, which the mother had noticed for two days. The meatus was red and swollen; the penis was swollen, showing the presence of lymphangitis. The child experienced great difficulty in micturition, and cried with pain at each attempt. He urinated frequently, and small quantities at a time. Some of the time he suffered from incontinence. The urine, which was collected in two portions, showed both portions to be cloudy. A thick, yellowish pus oozed from the urethra. A microscopical examination of the pus showed the presence of gonococci. At the end of about two weeks the mother directed my attention to a purulent discharge from the rectum. The child complained of pain with each evacu-

ation of the bowels, and intense itching about the anus. Examination showed the anus reddened, the margins slightly swollen. Upon causing a dilatation of the anal orifice, a purulent discharge was observed. Some of this pus was collected for microscopical examination, which showed the presence of gonococci. The child suffered from rectal irritation and tenesmus. The stools did not appear abnormal in color or composition, though they were small, frequent, and at least twice were streaked with blood.

The treatment consisted in the regulation of the diet, and for the first few days in the administration of one-drop doses of fluid extract of hyoscyamus four times daily for the relief of pain and vesical tenesmus. At the end of the first week urethral injections of about one per cent solution of ichthyol were ordered once daily; later, permanganate of potash solution in the strength of 1-5000 was used. For the rectal infection three ounces of peroxide of hydrogen diluted one-half was injected three times daily, followed by a suppository of bisulphate of quinine and ichthyol. At the end of about seven weeks the urethral and rectal discharge disappeared, and the little patient, who up to this time had been weak and anemic, improved rapidly, and has not suffered any relapse. The source of infection in this case could not be ascertained. The nurse girl, as is usual, was suspected, and was dismissed. While we have not very far to seek for the source of rectal infection, the exact manner in which it took place could not be learned. The mother had been previously cautioned regarding the infectious nature of the purulent discharge. She said that she exercised great care, and could not throw any light on the rectal infection.

Case II. A colored boy, aged nine years, who was seen at the dispensary of the Northwestern University Medical School during the summer of 1898. He had been sick for five weeks with painful urination and a purulent discharge from the urethra. There was phimosis. Microscopical examination showed the presence of gonococci. In this case it was elicited that shortly before the patient was taken ill his cousin, a young woman, nineteen years of age, came to make a prolonged visit to the family. During her stay she occupied the same bed with the patient. The boy was reticent and denied any immorality on his part or that of his cousin, though the circumstances were suspicious.

MODES OF INFECTION.

In private practice, as well as in hospital and dispensary practice, it is in most cases difficult to elicit accurately the mode of infection, though it cannot be doubted that most cases are due to

actual sexual contact, a lesser number to manipulations of the parts with infected hands, linens, and the like. The recorded cases show that the majority of children acquire the disease from servants, or from little girls suffering from vulvovaginitis.

COMPLICATIONS.

Strictures occur the same as in adults. Kammerer reports a case in a child two and a half years old, who, six months after an attack of gonorrhea, developed a stricture which did not permit the finest catheter to pass. A suprapubic puncture was made to empty the bladder. Two strictures were found in the anterior urethra, and one impermeable in the membranous portion. The deep stricture was treated by performing an external urethrotomy. The anterior strictures were relieved by dilatation.

Cystitis has been observed by Viger and Moncorvo. Rona encountered the complication in two cases. In one case it continued, and persistent hemorrhage occurred.

It has been supposed that epididymitis and orchitis do not occur as complications, owing, perhaps, to the functional inactivity of the organs. True, the condition has been seldom observed, though Rona reports a child fifteen months old suffering from a urethritis totalis. In about twelve days after the beginning of the disease it was observed that the scrotum was swollen, and both testicles were painful. After fourteen months the patient was dismissed as cured, though a little hard nodule, the size of a pea, remained in the left epididymis.

Lymphangitis of the penis, balanitis and balanoposthitis occur commonly. Rectal gonorrhea has not been observed in any of the cases previously reported.

The diagnosis presents but few difficulties, and differs in no important detail from that of adults. The specific must be differentiated from the non-specific variety. This differentiation depends on the presence or absence of the gonococci, and also upon the duration of the disease and the occurrence of complications. The gonococcus must be found in considerable number, and arranged in groups within the leucocytes. It must decolorize readily by Gram's method of staining. The best culture medium is made from the blood or serous fluid of man.

COMPLICATIONS COMMON TO CHILDREN OF BOTH SEXES.

Gonorrheal rheumatism has been reported as occurring after vulvovaginitis and purulent ophthalmia. The gonococci has been found in these joint effusions. It is an interesting observation that the arthritis which occurs in children is never of so severe a type

as that which occurs in adults. There is usually little or no fever. Ankylosis, which is so frequent a sequel in the adult cases, is unknown in the child, and is approached only in a few cases by temporary stiffness in the joints.

Endocarditis as a complication of gonorrhea such as occurs in the adult has not been recorded in children.

Cases of secondary purulent ophthalmia are not so frequently reported in the literature as one would be led to expect. Pott (Specific Vulvovaginitis im Kindesalter Jahrb. f. Kinderheilk., 1883) and Cahen-Brach (Jahrb. f. Kinderheilkunde, 1892) report such cases.

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PATHOLOGY OF GONORRHEA AND TREATMENT OF SOME SURGICAL COMPLICATIONS.

By D. N. EISENDRATH, M. D.

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The history of the gonococcus dates from 1879, when Neisser first found it in gonorrheal pus. It is a coccus occurring in pairs usually in the interior of leucocytes with a clear interspace between with adjacent sides flattened, biscuit-shaped. Its size varies from 0.8 μ. to 1.0 μ. in length, and from 0.6 to 0.8 μ. in width. In the tissues and pus its size is uniform; in cultures it varies. It is neither a strepto- nor a staphylococcus, but has a grouping of its own which is quite characteristic. It is nonmotile, and divides longitudinally. It is best stained with an alkaline methyl blue or gentian violet solution. It is decolorized by Gram's method. This serves to distinguish it from all other cocci except the so-called pseudogonococci, and the meningococcus of Weichselbaum. Lustgarten and Mannaberg described the former, pseudogonococci, as occurring in healthy and gonorrheal cases. It is a lemon yellow diplococcus, decolorized by Gram and occurring in about five per cent. If all of the well-known points, as to the morphology, staining reactions, enclosure and arrangement within cells be observed, a mistake in diagnosis is possible in only a small number of cases. The meningococcus in its morphology, intracellular position, appearance in culture media, decolorizing with the Gram stain, more completely resembles the gonococcus, but in this case as with the pseudogonococci, the culture test is the only reliable one in doubtful cases, namely, the gonococcus will only grow on media in which some albumin taken from the human body is present and will not grow upon ordinary media; whereas the other cocci spoken of will grow well on all media. Bumm was the first to obtain successful results in the cultivation of the gonococcus by using human blood serum. On account of the difficulty of obtaining this serum Wertheim suggested a far more practicable medium in the shape of human blood serum agar. Some human serum seems necessary, but ovarian, pleuritic, ascitic and hydrocele fluid can be substituted for the blood serum. Many other media have been suggested, but none have proven satisfactory. If none of the above fluids can be obtained a convenient method is that of Pfeiffer, namely, to allow a number of drops of blood from a previously sterilized finger to flow over the surface of a tube of nutrient agar. Surface colonies are pale, grayish, translu-

cent, finely granular, with finely notched borders. The gonococcus is exclusively aerobic, and is very sensitive to temperature. When inoculated with bits of agar into the anterior chamber of a rabbit's eye it causes the greatest irritation. A nonfatal peritonitis can be produced by injecting pure cultures in rats and guinea pigs, and in white mice and guinea pigs. Veillon and Grosz caused a fatal peritonitis by injecting large amounts of the pure culture. Sterilized gonococci cultures had the same effect. Finger caused transient redness, swelling, and pain of the knee-joint in animals. Inoculations upon the urethrae of animals always prove negative.

One of the most interesting contributions to our knowledge of the gonococcus since its discovery by Neisser and cultivation by Bumm and Wertheim has been made by De Christmas, published last year in the Annals of the Pasteur Institute. Time will permit of only a résumé of his work. He isolated the toxin of the gonococcus from pure cultures growing in rabbit serum-bouillon containing glucose, which he found better than the Wertheim medium. The injection of the toxin obtained from filtered cultures produces the same results as the cultures themselves. This toxin placed upon the human urethra caused, after one hour had elapsed, a drop of thick yellow pus, which contained no gonococci, but a large number of mono- and polynuclear leucocytes and epithelial cells, but no gonococci. The toxin acts first upon the epithelial cells and the leucocytic emigration is secondary, because in the first drops taken the former greatly exceeded the latter in number. This artificial urethritis was accompanied by pain and the other typical symptoms and disappeared gradually. It resembles the true gonorrhea in the fact that the secretion continues long after the inflammatory symptoms have disappeared. In cases in which there is a doubt as to the nature of the process the injection of such a toxin would clear it up. In animals the injection of the toxin causes rapid loss of weight and high fever. Locally it causes abscesses, with thick sterile pus, no tendency to spread and which heal by resorption. There are no lesions to be found post-mortem. Heat has no effect upon the toxin; it can be precipitated by alcohol and extracted with glycerine. The toxin is formed in the bodies of the gonococci themselves. Injected into the anterior chamber of a rabbit's eye it produces great irritation and early pus formation. Injected into the pleural cavity, it produces rise of pulse and respiration and all of the evidences of a pleuritis with the formation of thick yellow pus. Animals can be immunized by intravenous injections of the toxin in thirty days, so that injections of pure cultures or the toxin

have no effect. This may have a future in the treatment of some internal complications of gonorrhea.

In man the favorite ground for the gonococcus is upon mucous membranes and preferably those lined by cylindrical or transitional epithelium, not excluding squamous, as Bumm claimed. It readily penetrates between the cells into the connective tissue and between muscle fibers. It grows most luxuriantly, however, upon the surface, and it is probably through the destructive action of its toxin as Christmas has shown, upon epithelial cells and leucocytes, that pus is formed. It can easily be comprehended how the posterior urethra, bladder, seminal vesicles, vas deferens, and epididymis can be invaded by contiguity of tissue. It has been proven to be the cause of suppuration in the pelvic connective tissue in both male and female. In the female the urethra with its crypts and glands, the cervix uteri and Bartholinian glands are the favorite seats. Its etiological relation to endometritis and salpingitis, as well as to ovarian abscesses, can no longer be questioned. By continuity it may invade the peritoneum and cause a suppurative peritonitis. Infection of the rectum and conjunctiva are instances of inoculation infection. In severe cases it gives rise to a pyemic condition; the metastases in the joints, tendon sheaths and bursae; on the pleura, pericardium, endocardium, meninges, having been observed and proven to be caused by the gonococcus by a number of observers, microscopically and by the culture as well as reinoculation of the microorganisms upon healthy urethrae, again producing gonorrhea. Wertheim found the gonococci in thrombi in the blood vessels of the walls of the bladder in a case of gonorrheal cystitis, and other authors have proven their presence in the circulating blood; others again have cultivated them from the various above-named metastases, so that the chain of evidence is complete beyond all doubt to prove that the gonococcus may cause general as well as local infection. This will be taken up more in detail in another paper. The treatment of several of the metastatic complications interests us greatly, especially that of the joints and tendon sheaths. As regards the former, Nasse, who has written an extensive monograph on this subject, proved by culture the presence of the gonococcus alone in nineteen out of thirty cases. The localization of the gonococcus in the joints, tendon sheaths and bursae may take place almost from the very beginning of the disease, and not necessarily from the time the posterior urethra is invaded, as was formerly thought, depending more upon the invasion of the deeper layers of the tissues of the urethra and bladder. They are greatly fa-

vored by trauma, excesses, or irritating therapeutic measures. It is a frequent complication of the gonorrhea of pregnancy, or of the puerperium, of ophthalmia neonatorum, or of the vulvovaginitis of children. No joint can be said to be free from it. It does not generally involve one joint, but wanders from one joint to another as acute articular rheumatism, though does not seem to be as polyarticular. In men the knees are most frequently affected, in women the wrists and finger-joints. The disease in the joints may be acute, subacute or chronic. Of the former there are three varieties, the acute gonorrheal hydrops, in which there is a serous or sero-purulent effusion, a second variety in which in addition to the effusion there is extensive thickening of the capsule and involvement of the paraarticular tissues. In this variety the exudate may at times be purulent, cause perforation of the capsule and periarticular abscesses. A third variety resembles the ordinary pyemic arthritis with destruction of cartilage and capsule. The second variety is the most deplorable because, in spite of all treatment, it leads frequently to ankylosis. In general, the tendency of gonorrheal arthritis is through the early adhesions and capsular thickening as well as periarticular infiltration to lead to stiffness, subluxation and contractures. Examination of gonorrheal joints shows as the principal changes loss of endothelium and under this formation of granulation tissue, it is the change to connective tissue of the latter which leads to the above results.

Gonorrheal tendovaginitis and bursitis are not at all rare affections. The former occurs most frequently in the tendon sheaths of the extensors in the hand, and of the tibial muscles in the lower extremity. The latter in the bursa between the insertion of the tendo Achilles and the bone. The treatment of acute hydrops should be rest and compression with or without the application of some local remedy like guaiacol carbonate. The internal administration of salicylates and so forth is of but little avail. In the second variety with extensive capsular and paraarticular involvement, if a cast or a splint does not succeed within a short time, an early puncture of the joint, with washing out with some antiseptic solution, e. g., bichloride of mercury or lactate of silver with injection of iodoform emulsion, followed by massage, active and passive movements, will give the best results. If these latter means are not employed fairly early even in cases in which the joint is not washed out, ankylosis is almost certain to result. When the exudate is purulent, with high temperature and threatened destruction of the joint, arthrotomy is frequently necessary. The treatment of gonorrheal tendovaginitis

is comparatively simple. It is rarely necessary to open the tendon sheaths in order to evacuate the pus, but even here the tendency to stiffness of the fingers and toes must not be forgotten, and early massage and movements insisted upon.

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WHY IS GONORRHEA STILL A MUCH DREADED DISEASE?

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"Gonorrhea of the male urethra is, perhaps, one of those diseases which the practitioner encounters most frequently. He starts his practice with it, and it is the one which causes him many sorrowful hours up to the end of his days.

"He is very often reproached by his patients, either by reflections or in plain language, of being incompetent of curing even a gonorrhea, and the specialist, too, can hear it of his colleague, the practitioner. To be sure the patient and our social life are, to a certain extent, to blame for the failure, but the physician himself is also responsible. We dare say, there is no chapter in medical science in which we act so irrationally and superficially as in gonorrhea. A rubber, glass or tin syringe, a collection of a half a dozen prescriptions for injections; that forms the whole armamentarium of most physicians against this scourge."

These are the introductory words of E. Finger to the chapter on gonorrhea in the second edition of his book, "Blennorrhea of the Sexual Organs," published in 1891. The close observer of to-day will hardly find much to change in this statement, although many volumes on the same subject have been published since. To-day, as then, the therapy of gonorrhea is a much neglected child; to-day, as at that time, the practitioner feels himself helpless facing the much dreaded disease, and but a limited circle of the "initiated" comes out victorious in the fight against it. If this were not so I would not have the honor to read this paper before you to-night; there would not be so much discussion on the serious complications and sequelae of gonorrhea, and one would not so frequently hear questions from colleagues such as these: "Doctor, is there any remedy at all which cures gonorrhea?" or, "Doctor, do you really believe gonorrhea can be permanently cured?" or, "What do you prescribe for gleet?" and the like.

The time allotted is too short to discuss the subject in question from all the points of interest and importance, consequently I have to confine myself to a few facts, which, I think, ought to be first mentioned, alluding to others only in a passing way. I might run the risk of provoking opposition, as is always the case when an attempt is made to break from time-honored methods or

prejudices; but I will be satisfied if it should assist in clearing the situation of the questions involved in the subject.

Asking for the cause of failure in successfully dealing with gonorrhea, we find the answer in the following points. Superficial diagnosis, incorrect conception of the gonorrheal process, improper selection of remedies, and the almost universal tendency to start in with an effective treatment too late and to discontinue it too soon, and, last but not least, the lack of individualizing cases. I say this with the presumption that the patient follows all of our instructions in every detail and that he is not afflicted with any of the constitutional diseases which frequently favor the appearance of complications and prolong the gonorrheal process. A urethral secretion is quite often pronounced gonorrhea or gleet, while there has never existed a gonorrhea or where this process came to an end—leaving only the sequelae in its track.

Hard and soft chancroidal ulcers, and the presence of mucous patches in the urethra during the secondary stage of syphilis furnish a secretion which is mistaken for gonorrhea and is treated as such, until the appearance of local symptoms on the skin and other parts of the body call the attention to the real character of the discharge. The same applies to herpetic eruptions and tuberculosis of the urethra, leading to tubercular ulcerations, which may, in rare instances, be a partial symptom of more or less generalized urogenital tuberculosis, or, in far rarer cases, start primarily in the urethra. In parenthesis I desire to state that simultaneous infection with gonorrhea and syphilis is not a very rare occurrence, and the same is true of a urethra affected with secondary syphilis in which the gonococcus may become implanted.

Traumatic urethritis and secretions in acute exanthematic diseases should hardly lead into errors, which is not to say that the latter precludes the possibility of a gonorrhea. Another condition, which in its initial symptoms most closely resembles specific urethritis and therefore occasionally may be mistaken for it, is the so-called pseudogonorrhea. It would better be called acute nonspecific urethritis, including all kinds of infectious urethritis which cannot be otherwise classified, and which were first described by Bockhard, who observed about fifteen cases of the kind. The whole process lasted, as far as my recollection goes, about ten days, and the microscopical examination for gonococci was negative. Finger and Neisser recorded similar cases, produced by bacilli, streptococci and staphylococci.

It should also be remembered that small concrements, polypoid

or papillomatous growths in the canal produce symptoms of urethritis, but a urethroscopical investigation should promptly reveal the real condition.

Urethrorrhea and prostatorrhea, folliculitis and periglandulitis, simulate chronic specific urethritis. They all might be complicated by the presence of gonococci, but very often they are not, and yet they are described as gleet. A thorough microscopical examination, notwithstanding all the other auxiliary methods of diagnosis, would prove the presence or absence of gonorrhea in a given case. Whatever has been published against the fact that the gonococcus, discovered by Neisser in 1879, is the cause of the disease in question, is not strong enough to disprove its exact etiological significance and value. In 1885 Bumm examined the vaginal and urethral secretion in women and discovered, besides the gonococcus Neisser, various forms of cocci which he called diplococcus flavus, diplococcus citreus conglomeratus and diplococcus albicans. Lustgarten and Manaberg subjected the normal urethra to a bacteriological examination in 1887 and succeeded in isolating eleven varieties of bacteria. The statement that they found a diplococcus which displayed no difference from the gonococcus N. regarding size, shape and relation to the staining process has not been indorsed by a great many others, especially by Petit and Wasserman.

Legrain in his publication, "Les microbes des eculements de l'uretre," 1888, with good reason censures the imperfect way in which the authors communicated the results of their research. In 1896 E. Tano in Tokio published a very thorough paper on his examinations of the urethral filaments in chronic urethritis. He succeeded in cultivating twenty-six kinds of bacteria from them, ten different bacilli and sixteen varieties of cocci, only one of which, called micrococcus II g., closely resembled the gonococcus N. in shape, size and relation to the aniline dyes and which apparently was the gonococcus Neisser associated with other microorganisms, as is often the case in chronic gonorrheal urethritis.

But what do all these publications prove? Hardly more than the relationship between the gonococcus and gonorrhea, and that other bacteria inhabit the apparently healthy urethra, or that certain microorganisms inoculated upon the healthy urethra are also capable of provoking more or less severe and profuse secretions.

It is commonly believed that only the presence of the gonococci in the pus cells permits the diagnosis gonorrhea. But are pus cells always found in the gonorrheal secretion? Certainly not. We

find hardly any on the first and second day of the disease and usually none when the secretion has assumed a mucoid character. At that time we see but flattened epithelium and occasionally on its border or scattered between the epithelial cells a few gonococci. And the secretion will again assume purulent character within a few days when at this time we discontinue treatment, and then we will again find the typical gonococci inside of the numerous pus cells. What conclusions are to be drawn from the above facts? Since it is established beyond any doubt that gonorrheal urethritis is an infectious disease we will have to break with the antiquated principle of the expectant treatment as it was taught in former years, especially by the Vienna school, and whose present representative, Finger, still adheres to it. This principle is based upon false presumptions as to the pathology of the gonorrheal process and therefore untenable from the bacteriological standpoint and against the fundamental laws of modern surgery. Does any surgeon, taking charge of an infected wound, advise to delay the application of antiseptics for a week until the disease has reached the acme, or does a gynecologist in a case of puerperal fever prescribe sandalwood oil and plenty of seltzer and milk for ten days and more before he dares to resort to local interference? And the same rules should apply to the treatment of gonorrhea. It must be effective and should begin as early as possible to prevent the gonococcus from penetrating the tissues, and it should be kept up until we are satisfied that all the gonococci are annihilated. In a paper read before this body about two years ago, I presented my views upon this subject in detail; neither time nor your patience would allow of reiterating them to-night. I only state briefly that the silversalts still rank highest among the antigonorrhoics and that their value in destroying the vitality of the gonococcus is daily more appreciated.

For the past fourteen months I have used protargol, a silversalt, which was highly recommended by Neisser and which favorably compares with argonin in its prompt effect and total lack of irritation of the tissues. It has a strong penetrating power and is therefore also applicable in the more chronic cases. But in using any of the silversalts we must not forget that more or less reaction will follow each application, which manifests itself by a secretion lasting for from four hours to several days, according to the concentration of the solutions used. In applying the nonirritating silver solutions in very mild concentration, we make a grave mistake by only injecting during the day for say fourteen hours,

while nothing is done at all during the night. What we gain during the day we lose again in this way, forgetting that our remedies are not a permanent antiseptic dressing. This is of the greatest importance for the acute stage of the disease, in which the gonococcus is at the height of its energy and vitality, and multiplication takes place rapidly, while in the stadium decrementi more concentrated solutions may be used and at longer intervals.

It should further be an absolute rule not to apply an irritating silver solution to the tissues before the acute reaction has passed off. The oculist will not treat the conjunctiva with a few drops of a one per cent nitrate of silver solution oftener than once in forty-eight hours, and yet there are men who advise daily brushing of the whole acutely inflamed urethra with ten and twenty per cent solutions of this salt through the urethroscope until the submucous tissue, denuded of the protective epithelium, offers an open gate for the invasion of the system by the gonococcus.

Another point of importance is that the silversalts in a certain concentration do not check the catarrh, and they ought therefore not be expected to dry up the canal after having annihilated the gonococci. To do this and do it at the right moment is left to the astringents, which accomplish the desired result within a very short time. Wherever this does not take place, when even a scanty secretion appears at the meatus or only as filaments in the urine, we will have to search for complications. The most common are strictures or their forerunners, glandulitis and periglandulitis, or the disease has invaded the posterior urethra, the seminal vesicles and Cowper's glands. By stripping these parts and by a microscopical examination of the stained specimen obtained in this way, we gain valuable information as to the nature of the secretion, and remove any doubt of the case being one of urethrorrhea, prostatorrhea or gonorrhea. But many a case of posterior urethritis of the final type is indiscriminately treated with injections in the anterior urethra for months, and from these quarters you will often hear the complaint that the silversalts do not give any better results than other applications. And in many a case of chronic or subacute anterior urethritis deep injections into the healthy posterior urethra, and even into the bladder, are made or bougies passed, unnecessarily irritating and injuring the parts not concerned in the disease.

Altogether, we will rarely have occasion to see posterior urethritis in those cases of acute gonorrhea which are treated from the start with the silversalts, provided the patient observes our instructions in regard to diet and habits.

On the other hand, this complication and others like cystitis, epididymitis, prostatitis and prostatic abscess will hardly ever fail to appear in the course of a gonorrhea, if we do not understand that the gonococcus can be killed by the steel sound. Now, if this is the correct and scientific procedure, why is it not adopted by the surgeon? Why doesn't he poke a piece of steel into an infected wound or into a septic peritoneal cavity? But I understand the effect desired in passing heavy steel sounds in gonorrhea is not only mechanical, but also absorptive. Now, what do we wish absorbed in acute or subacute gonorrhea? In this stage of the disease there are no plastic infiltrations or indurations, and the only product which might possibly become absorbed is the gonococcus. I hope I do not exaggerate when I say that some cases of general infection are started from lesions in the urethra caused by the steel sound. Many cases are reported and I have seen some in which these symptoms rapidly followed a forcible instrumentation in an infected urethra.

We will find many pages in the text-books filled with theories and discussions regarding the question whether posterior urethritis, cystitis and epididymitis appear at the end of the second or third week after the first alarm at the meatus, and some cases are recorded in which these complications were noticed after eight days. I can only say that these complications appear within forty-eight hours after a steel sound is passed into the healthy posterior urethra through an infected pars anterior.

Where this does not occur the patient had incidentally washed out the gonococcus from the surface of the canal by urinating before the manipulation.

Looking for an explanation why this remainder of our former misapprehension of the infectious character of the disease still enjoys the favor of so many followers, we will have to turn back to the time when we knew little or nothing of the etiological significance of the gonococcus and of the pathology of the process. There have been cases in which the gonococcus had exhausted its own vitality, as do other microorganisms, leaving behind infiltrations around the follicles and with them scanty seromucoid or mucopurulent discharges; in others the secretion was so scanty that it did not appear at the meatus, but remained glued to the urethral mucosa until the stream of urine washed it out, rolling it up and giving it the shape of filaments or shreds. This was the place where the steel sound victoriously dominated. There was occasion to crush infiltration, stimulate circulation and further the absorption, and the urethra became dry.

But this, unfortunately, induced the misconception that the steel sound had cured chronic gonorrhea, and, consequently, led to the conclusion to apply it in the earlier stages in order to prevent gleet. How disastrous the conclusion was will only be appreciated by those who, blindly following the teaching, caused so much harm and still see it done by others. Recognizing this deplorable fact, one might almost wish that the real advantages of the steel sound had never been discovered, or at least not until fifty years later.

I do not expect to be understood that the steel sound and bougies are exclusively responsible for the many complications in the course of a gonorrhea; they quite often follow treatment by internal medication alone and more yet frequently injections with the four sulphates, resorcin, thalin, tannic acid, alum, bismuth and many other preparations. If anybody would tell me to-day: "So and so many cases have been cured by these remedies," I would only answer that those which really got well did so not because of, but notwithstanding, the treatment, and then almost invariably at the expense of the normal condition and function of one or the other of the main or accessory genital organs. Otherwise we would not see so many cases of stricture, indurating prostatitis, perivesiculitis adhesiva, azoospermy, aspermatism, and sexual neurasthenia. But in the vast majority of the so-called cured patients a thorough examination would have revealed the gonococcus, alone or associated with other microorganisms, in the filaments of the morning urine, in the secretions of Cowper's glands, prostate, and seminal vesicles, obtained by stripping, and in the discharge expressed from the follicles and adhering to the probe-pointed bougie after passing the latter up and down the anterior urethra.

These are just the cases which largely contribute to the surgical work of the gynecologist. They are responsible for the repeated question: "When may a person, once afflicted with gonorrhea, safely be permitted to marry?" This question will find its answer at the close of this article. I only desire to say here that I do not indorse the common expression, "Once a gonorrhoic, always a gonorrhoic."

Another source of unduly prolonged urethral gonorrhea is the infected paraurethral ducts, which should be looked for in cases in which the discharge appears time and again after every symptom of the disease had disappeared, or when, excluding a new infection or a posterior urethritis, the persistence of the symptoms points to some abnormal condition in the pars anterior.

Touton was the first to call attention to this congenital malformation. Diday first observed paraurethral blenorrhea, and Otis, in analyzing three of his cases says: "The foregoing cases, taken together, appear to me to warrant the inclusion of follicular sinuses among the possible causes of persistent urethral discharge.

Most frequently I have occasion to see paraurethral ducts associated with congenital malformation, such as hypospadias and epispadias, in which cases they can hardly be overlooked, being located either in the groove shaped open part of the canal, or in the raphe penis, the limbus preputii, and around the blind urethral excavation at the apex glandis. But they are more frequently overlooked when situated inside and near the orifice of a normal urethra. Conservative treatment in these cases is not very satisfactory, better and more speedy results could be obtained by division and cauterizing, or as Ehrman on the basis of twenty-three cases advises, electrolysis. The same is true of chronic gonorrhea of Cowper's glands, extirpation being the most reliable expedient. Extirpation, in chronic cases of perivesiculitis, was also advised by Eugene Fuller in a very able paper in the Journal of Cutaneous and Genito-urinary Diseases some two years ago. Persistent massaging, hot rectal injections and local applications of silver solutions have given me satisfactory results in most desperate cases, and should therefore be fully exhausted before the certainly effective, but serious operation is resorted to.

Time does not allow me to dwell long on the merits or demerits of various other methods used in gonorrhea; I have to confine my very brief remarks to Valentine and Danet's irrigations and the Oberlander-Kollman treatment with dilating and flushing of the canal, either successively or simultaneously. The reports as to their efficiency in acute gonorrhea are contradictory. I would not recommend either. They might perhaps, by simply washing out, do good in a very mild case at a moment when comparatively few gonococci appear on the surface of the urethra, but they do much traumatic harm in an acutely inflamed canal. In chronic cases, where the process is confined to a limited number of follicles, the combined treatment of cauterizing through the urethroscope or dilating and irrigating in experienced hands will be gratifying.

It is hardly necessary to emphasize the hopelessness of a cure by an abortive treatment, and wherever such a result is obtained by the application of highly concentrated solutions it is done at the expense of the tissues, which break down and cicatrize, and I would not call such a result a cure.

The cure of gonorrhea by internal medication exclusively will always remain an ideal, because it can not be realized, and those who believe in it are happy in the delusion, which the patient does not share quite as long.

It remains to discuss the most important point in this subject—"When may the gonorrheal process be pronounced extinct?" This question is unfortunately raised at a very late moment, usually a week or so before the inquirer secures his marriage license, instead of at the end of treatment.

The answer is short and decisive: When no gonococci exist or may be suspected as existing along the urethral canal and in the neighboring organs related to it. But, how are we going to find this out? What means do we have to decide whether a scanty mucoid or seromucoid secretion at the orifice, or one or more shreds in the urine are of gonorrheal origin or ordinary urethrorrhea, prostatorrhea, or urethral catarrh?

We know that, for longer or shorter intervals, secretion and shreds do not appear in the urine and, nevertheless, the gonorrheal process is still in existence, although latent, because the diseased Littré glands are temporarily closed, or because a mutual adaptation between the gonococcus and the tissues has taken place. It is not necessary to discuss this well-known fact in detail, or that this amicable relation does not mean more than a truce until a sexual excitement, an exposure, indulgence in alcohol or physical overwork occurs as a disturbing element. In remembrance of this, we will always be in a position to provoke a secretion, in which at least a few specimens of the gonococcus can be found, or if this should not be the case, we may get the final answer from a culture test. When it comes to decide such subjects or to the more chronic and aggravated cases it is evident that only a specialist or a very few especially versed general practitioners can deal with problems requiring special appliances and extended experience. But it is the province of the general practitioner to deal with acute gonorrheal urethritis, because it is he to whom as a rule the patient applies first for advice and in his hands rest the management and final development of the case.

If the rules on this matter should become uniformly adopted, if we all could agree as to the modern principles of diagnosis and treatment of gonorrhea, there would not be much left of the "ravages of gonorrhea," there would not be any need to call for "legislation against the spreading of gonorrhea," and gynecological societies could afford to turn attention to more fruitful subjects than

discussion as to the advisability of police control of prostitutes. Then the time will have arrived to place on the shelves of the medical curiosity museum, next to the steel sounds and sandalwood oil the sentence, attributed to the great French syphilologist, Ricord, the honor of whose birthplace belongs to this country: "Une chaude pisse comménce, Dieu le sait quand elle finira!" Or, in our own language: "Gonorrhea a disease which starts as a slight burning urination, but only the Lord knows when and how it will end."

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